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From: Kevin G. Mierzwa

Date: June 23, 2005

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Comments: Attached is Brief on appeal pursuant to Notice of
Appeal dated 4/27/05.

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Donna Kraft
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28333 TELEGRAPH ROAD, SUITE 250, SOUTHFIELD, MICHIGAN 48034
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JUN 23 2005

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:

Timothy G. Offerle

Group Art Unit: 3663

Serial Number: 10/708,671

Examiner: To, Tuan C.

Filed: 03/18/2004

For: METHOD AND APPARATUS FOR CONTROLLING BRAKE-STEER IN AN
AUTOMOTIVE VEHICLE IN REVERSE

Attorney Docket No: 81095823FGT 1905 PA

CERTIFICATE OF MAILING/TRANSMISSION (37 C.F.R. § 1.8(a))

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Kevin G. Mierzwa

BRIEF ON APPEAL

Mail Stop Appeal Brief – Patents
Commissioner for Patents
Box 1450
Alexandria, VA 22313-1450

Sir:

The following Appeal Brief is submitted pursuant to the Notice of Appeal dated April 27,
2005.

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I. Real Party in Interest

The real party in interest in this matter is Ford Global Technologies, LLC, which is a wholly owned subsidiary of Ford Motor Company both in Dearborn, Michigan (hereinafter "Ford").

II. Related Appeals and Interferences

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

III. Status of the Claims

Claims 1-4, 6-8, 11-18, 20-27, and 29-35 stand rejected in the Final Office Action. Claims 5, 9, 10, 19, and 28 stand objected to but would be allowable if rewritten in independent form. A copy of the claims on appeal is attached as an Appendix.

IV. Status of Amendments Filed After Final

There have been no amendments filed subsequent to the final rejection.

V. Summary of the Invention

Claim 1 is a claim to a method of controlling an automotive vehicle. The method is generally set forth with respect to Figure 18 and the accompanying description. The branch of Figure 19 that corresponds to the present claims is set forth in steps 256-262. The corresponding description is set forth in paragraph 121. Claim 1 recites generating a reverse direction signal corresponding to a reverse direction of the vehicle. This is detected in step 256. The specification refers to step 230 as the manner in which determining a reverse direction is performed. Paragraph 113 describes several ways in which a reverse direction of the vehicle may be determined. One way in which the reverse direction may be obtained is using the transmission shift lever, a push button, a transmission controller, or a wheel speed sensor. These are set forth in lines 4-9 of paragraph 113.

Claim 1 has a second step of applying brake-steer in response to the reverse direction signal. Brake-steer is described in various places of the specification, including paragraphs 37 and 38, which are illustrated in Figure 1. That is, brake-steer changes the characteristic of the vehicle such as the turning radius using one or more brakes, the application of differential (positive or negative) torques, or a combination of the braking and differential torques).

Claim 2 recites generating a reverse direction signal from a shift lever. This is set forth in paragraph 113, line 5.

Claim 3 recites generating the reverse direction from a push button. This is set forth in paragraph 113, line 6.

Claim 4 recites that the reverse direction signal is generated from a transmission controller. This is set forth in line 8 of paragraph 113.

Claim 5 was indicated as allowable as set forth by the Examiner.

Claim 6 recites that applying brake-steer comprises at least one brake at a first wheel to reduce a turning radius. This is set forth in step 274 of Figure 19. This is also set forth in paragraph 38.

Claim 7 recites that applying brake-steer comprises applying increased drive torque to a second wheel relative to a first wheel. This is set forth in step 276 of Figure 19, as well as in paragraph 38. Also, applying differential torque is set forth in paragraph 98, lines 10-12.

Claim 8 recites that applying brake-steer comprises applying brake-steer to a front wheel. This is also set forth in paragraph 98, line 11.

Claims 9 and 10 were indicated as allowable by the Examiner if rewritten in independent form.

Claim 11 recites determining a steering wheel angle in applying brake-steer comprises applying brake-steer in response to the reverse direction signal and the steering wheel angle. Determining the steering wheel angle is set forth in step 208, and applying brake-steer in response to the steering wheel angle is set forth in Figure 11. Using the steering wheel angle to determine the amount of brake-steer is set forth in paragraphs 107 and 108.

Claim 12 recites determining a yaw rate and applying brake-steer in response to the reverse signal and the yaw rate. Determining the yaw rate is set forth in step 265. Step 265 is described in paragraph 126.

Claim 13 sets forth the step of applying brake-steer in response to the reverse direction signal and steering wheel torque. Using brake-steer torque is set forth in Figure 12 and the corresponding description in paragraph 110.

Claim 14 recites determining a steering wheel angle and a vehicle velocity and wherein the brake-steer comprises applying brake-steer in response to the reverse direction signal, steering wheel angle and vehicle velocity. This is generally set forth in paragraph 107.

Claim 15 is another independent claim and is directed to a control system for a vehicle. The control system includes means to generate a reverse direction signal corresponding to a reverse direction of the vehicle. As mentioned above, various means are set forth for determining reverse direction in paragraph 113. A controller 134 of Figure 4, is programmed to apply brake-steer in response to the reverse direction signal. Support for this may be found above relative to Claim 1.

Claims 16, 17, and 18 correspond to Claims 2, 3, and 4, whose support is set forth above.

Claim 19 was indicated as allowable.

Claim 20 recites applying a first brake and a second brake to reduce the turning radius of the vehicle. Applying brakes is set forth in many locations throughout the specification, including step 274. Also, applying more than one brake is set forth in paragraph 38, line 2.

Claim 21 corresponds to Claim 6, whose support is set forth above.

Claim 22 corresponds to Claim 7, whose support is set forth above.

Claim 23 corresponds to Claim 11, whose support is set forth above.

Claim 24 corresponds to Claim 12, whose support is set forth above.

Claim 25 corresponds to Claim 13, whose support is set forth above.

Claim 26 corresponds to Claim 14, whose support is set forth above.

Claim 27 is an independent claim directed to a vehicle comprising a shift lever having a reverse position generating a reverse position signal. As mentioned above, the reverse position signal being generated from a shift lever is set forth above in paragraph 113. Claim 27 further recites a controller coupled to the shift lever. The controller applies brake-steer in response to the reverse position signal. This last clause is similar to those set forth in Claims 1 and 15.

Claim 29 recites applying brake-steer by applying a first and second brake to reduce a turning radius of the vehicle. This is set forth in Claim 20 above. Support can be found above with respect to Claim 20.

Claims 30, 31, 32, 33, 34, and 35 generally correspond to Claims 20-26. Support for these claims is set forth above.

VI. Grounds of Rejection to be Reviewed on Appeal

The following issues are presented in this appeal:

Whether Claims 1, 2, 4, 6-8, 11, 13-16, 18, 20-23, 25-27, 29-32, 34, and 35 are unpatentable under 35 U.S.C. §103(a) over *Ritz* (2002/0060103 A1) in view of *Yone* (2003/0172757 A1).

Whether Claims 3 and 17 are unpatentable under 35 U.S.C. §103(a) over *Ritz*, *Yone* and in further view of *Kakinami* (2001/0026317 A1).

Whether Claims 12, 24 and 33 are unpatentable under 35 U.S.C. §103(a) over *Ritz*, *Yone* and in further view of *Takagi* (2003/0080877 A1).

VII. Argument

The Rejection of Claims 1, 2, 4, 6-8, 11, 13-16, 18, 20-23, 25-27, 29-32, 34, and 35

Claim 1

Independent Claim 1 has two steps for controlling an automotive vehicle. The first step states "generating a reverse direction signal corresponding to a reverse direction of the vehicle." The second step is "applying brake-steer in response to the reverse direction signal."

The Examiner has cited the *Ritz* reference for brake-steer of a vehicle. Appellant agrees that brake-steer is set forth in the *Ritz* reference. Appellant also admits that the claim recites that the control system monitors the status of the transmission and/or the clutch. However, as is taught in the specification a neutral position of the transmission may be used to determine a need for steering support. The Examiner admits that no teaching or suggestion is provided for activating brake-steer in response to a reverse direction signal. The *Yone* reference is set forth for providing a reverse direction signal. Appellant respectfully submits that this is a hindsight reconstruction of the present invention. First, the *Yone* reference has nothing to do with brake-steer. Rather, the *Yone* reference is a transmission operating apparatus. No

teaching or suggestion is provided for brake-steering in the *Yone* reference. That is, the *Yone* reference also does not teach applying brake-steer in response to the reverse direction signal. The *Yone* reference merely provides a reverse direction signal. Thus, there is no teaching or suggestion in either of the references for "applying brake-steer in response to the reverse direction signal." Appellant therefore respectfully requests the Examiner for reconsideration of Claim 1.

Claim 2

Claim 2 is believed to be allowable for the same reasons set forth above with respect to Claim 1. The recitations of a shift lever are found in the *Yone* reference. However, the *Yone* reference does not teach or suggest applying brake-steer in response to the reverse direction signal from a shift lever. Appellant therefore respectfully requests the Examiner for reconsideration of Claim 2.

Claim 4

Claim 4 recites generating a reverse direction signal from a transmission controller. Although a controller is found in the *Yone* reference, no teaching or suggestion is provided for applying brake-steer in response to the reverse direction signal from the transmission controller. Appellant respectfully requests the Board to reverse the Examiner's position with respect to Claim 4.

Claims 6

Claim 6 recites applying at least one brake at a first wheel to reduce a turning radius. Although applying brakes is described in the *Ritz* reference, no teaching or suggestion is provided for applying brake-steer in response to the reverse direction signal. Appellant respectfully requests the Board to reverse the Examiner's position with respect to Claim 6.

Claim 7

Claim 7 recites applying an increased drive torque to a second wheel relative to a first wheel. Although additional drive torque is set forth in paragraph 14, no teaching or suggestion is provided for increasing the drive torque in response to a reverse direction signal.

Appellant therefore respectfully request the Board to reverse the Examiner's position with respect to Claim 7.

Claim 8

Claim 8 recites applying brake steer to a front wheel. Although various types of braking are described in the *Ritz* reference, no teaching or suggestion is provided in the *Ritz* reference for applying brake-steer in response to a reverse direction signal. Appellant therefore respectfully request the Board to reverse the Examiner's position with respect to Claim 8.

Claim 11

Claim 11 recites applying brake-steer in response to a reverse direction signal and a steering wheel angle. Although the inside and outside of a curve is suggested, no teaching or suggestion is provided for a steering wheel angle for this determination. Therefore, Appellant respectfully requests the Board to reverse the Examiner's position with respect to Claim 11.

Claim 13

Claim 13 recites applying brake-steer in response to the reverse direction signal and steering wheel torque. The Examiner points to the steering system and braking system but not provide a basis for steering wheel torque on page 4 of the Final Office Action. Appellant therefore respectfully requests the Board to reverse the Examiner's position with respect to Claim 13.

Claim 14

Claim 14 recites applying brake-steer in response to the reverse direction signal, steering wheel angle and vehicle velocity. As mentioned above, the *Ritz* reference does not teach applying brake-steer in response to the reverse direction signal. Also, as mentioned above, no steering wheel angle is also set forth for applying brake-steer in response to the reverse direction signal. Applying brake-steer in response to vehicle velocity is set forth in paragraph 31. However, no reverse direction signal is set forth. Therefore, Appellant respectfully requests the Board to reverse the Examiner's position with respect to Claim 14.

Claim 15

Claim 15 recites a controller programmed to apply brake-steer in response to the reverse direction signal. This is similar to the limitation set forth in Claim 1 above. Appellant respectfully believes that Claim 15 is also allowable for the same reasons set forth above.

Claim 16

Claim 16 corresponds to Claim 2 and is believed to be allowable for the same reasons set forth above.

Claim 18

Claim 18 corresponds to Claim 4 and is believed to be allowable for the same reasons set forth above.

Claim 20

Claim 20 recites applying a first brake and a second brake to reduce the turning radius of the vehicle. The Examiner has pointed to no specific teaching for Claim 20.

Claim 21

Claim 21 corresponds to Claim 6 and is believed to be allowable for the same reasons set forth above.

Claim 22

Claim 22 corresponds to Claim 7 and is believed to be allowable for the same reasons set forth above.

Claim 23

Claim 23 corresponds to Claim 11 and is believed to be allowable for the same reasons set forth above.

Claim 25

Claim 25 corresponds to Claim 13 and is believed to be allowable for the same reasons set forth above.

Claim 26

Claim 26 corresponds to Claim 14 and is believed to be allowable for the same reasons set forth above.

Claim 27

Claim 27 is an independent claim that recites a shift lever having a reverse position generating a reverse position signal. A controller is coupled to the shift lever and applies brake-steer in response to the reverse position signal. This is similar to the limitations set forth above with respect to claims 1 and 15. Appellant therefore respectfully believes that Claim 27 is also allowable for the same reasons set forth above.

Claim 29

Claim 29 corresponds to Claim 20 and is believed to be allowable for the same reasons set forth above.

Claim 30

Claim 30 corresponds to Claims 6 and 21 and is believed to be allowable for the same reasons set forth above.

Claim 31

Claim 31 corresponds to Claims 7 and 22 and is believed to be allowable for the same reasons set forth above.

Claim 32

Claim 32 corresponds to Claim 23 and is believed to be allowable for the same reasons set forth above.

Claim 34

Claim 34 corresponds to Claim 25 and is believed to be allowable for the same reasons set forth above.

Claim 35

Claim 35 corresponds to Claim 26 and is believed to be allowable for the same reasons set forth above.

The Rejection of Claims 3 and 17**Claim 3 and 17**

Claims 3 and 17 recite that a push button is used for generating the reverse direction signal. Appellant respectfully believes that the shift reverse switch 3 illustrated in Fig. 3 is not a push button. No teaching or suggestion can be found in the *Kakinami* reference for a push button. Appellant respectfully believes that the switch is a shift lever switch that is activated from the shift lever of the vehicle. Therefore, Appellant respectfully submits that no push button switch is illustrated. Further, no teaching or suggestion is provided for the missing limitations described above with respect to the *Yone* and *Ritz* references. The *Kakinami* reference does not teach or suggest the use of activating brake-steer in response to a reverse signal. Appellant therefore respectfully requests the Examiner to reconsider the rejection of claims 3 and 17.

The Rejection of Claims 12, 24 and 33**Claims 12, 24 and 33**

Claims 12, 24 and 33 each recite that brake-steer is applied in response to a reverse direction signal and a yaw rate. The *Takagi* reference does teach a yaw rate sensor 30. However, no teaching or suggestion is provided for generating brake-steer in the *Takagi*

reference. Therefore, no teaching or suggestion is provided in the *Takagi* reference for providing brake-steer in response to a reverse direction signal and a yaw rate signal. Appellant therefore respectfully requests the Examiner to reconsider the rejection of claims 12, 24 and 33.

VIII. Appendix

A copy of each of the claims involved in this appeal, namely claims 1-35 is attached hereto as Appendix.

IX. Conclusion

For the foregoing reasons, Appellant respectfully requests that the Board direct the Examiner in charge of this examination to withdraw the rejections.

Please charge any fees required in the filing of this appeal to deposit account 06-1510 or, if there are insufficient funds, to use deposit account 06-1505.

Respectfully submitted,



Kevin G. Mierzwa
Registration No. 38,049
Attorney for Appellant

Date: 6/23/05

Artz & Artz, P.C.
28333 Telegraph Road, Suite 250
Southfield, Michigan 48034
(248) 223-9500

APPENDIX

1. A method of controlling an automotive vehicle comprising:
generating a reverse direction signal corresponding to a reverse direction of the vehicle; and
applying brake-steer in response to the reverse direction signal.
2. A method as recited in claim 1 wherein generating a reverse direction signal comprises generating a reverse direction from a shift lever.
3. A method as recited in claim 1 wherein generating a reverse direction signal comprises generating a reverse direction from a push button.
4. A method as recited in claim 1 wherein generating a reverse direction signal comprises generating a reverse direction from a transmission controller.
5. A method as recited in claim 1 wherein generating a reverse direction signal comprises generating a reverse direction from a wheel speed sensor.
6. A method as recited in claim 1 wherein applying brake-steer comprises applying at least one brake at a first wheel to reduce a vehicle turning radius.
7. A method as recited in claim 1 wherein applying brake-steer comprises applying an increased drive torque to a second wheel relative to a first wheel.
8. A method as recited in claim 1 wherein applying brake-steer comprises applying brake-steer to a front wheel.
9. A method as recited in claim 1 wherein applying brake-steer comprise proportioning brake-steer between a front wheel and a rear wheel.
10. A method as recited in claim 9 wherein proportioning comprises proportioning between the front and rear wheel in response to a transfer case mode.

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11. A method as recited in claim 1 further comprising determining a steering wheel angle and wherein applying brake-steer comprises applying brake-steer in response to the reverse direction signal and steering wheel angle.

12. A method as recited in claim 1 further comprising determining a yaw rate and wherein applying brake-steer comprises applying brake-steer in response to the reverse direction signal and said yaw rate.

13. A method as recited in claim 1 further comprising determining a steering wheel torque and wherein applying brake-steer comprises applying brake-steer in response to the reverse direction signal and steering wheel torque.

14. A method as recited in claim 1 further comprising determining a steering wheel angle and a vehicle velocity and wherein applying brake-steer comprises applying brake-steer in response to the reverse direction signal and steering wheel angle and vehicle velocity.

15. A control system for a vehicle comprising:
means to generate a reverse direction signal corresponding to a reverse direction of the vehicle; and
a controller programmed to apply brake-steer in response to the reverse direction signal.

16. A control system as recited in claim 15 wherein said means comprises a shift lever.

17. A control system as recited in claim 15 wherein said means comprises a push button.

18. A control system as recited in claim 15 wherein said means comprises a transmission controller.

19. A control system as recited in claim 15 wherein said means comprises a wheel speed sensor.

20. A system as recited in claim 15 wherein said controller is programmed to apply brake-steer by applying a first brake and a second brake to reduce the turning radius of the vehicle.

21. A system as recited in claim 15 wherein said controller is programmed to apply brake-steer by applying at least one brake at a first wheel to reduce a vehicle turning radius.

22. A system as recited in claim 15 wherein said controller is programmed to apply brake-steer by applying an increased drive torque to a second wheel relative to the first wheel.

23. A control system as recited in claim 15 further comprising a steering wheel angle sensor generating a steering wheel angle signal, said controller programmed to apply brake-steer in response to the reverse directional signal and the steering wheel angle signal.

24. A control system as recited in claim 15 further comprising a yaw rate sensor generating a yaw rate signal, said controller programmed to apply brake-steer in response to the reverse direction signal and yaw rate signal.

25. A control system as recited in claim 15 further comprising a steering wheel torque sensor generating a steering torque signal, said controller programmed to apply brake-steer in response to the reverse direction signal and steering torque signal.

26. A control system as recited in claim 15 further comprising a steering wheel angle sensor generating a steering wheel angle signal and a vehicle velocity sensor generating a vehicle velocity signal, said controller programmed to apply brake-steer in response to the reverse direction signal and steering wheel angle and vehicle velocity signal.

27. A vehicle comprising:
a shift lever having a reverse position generating a reverse position signal; and
a controller coupled to the shift lever, said controller applying brake-steer in response to the reverse position signal.

28. A vehicle as recited in claim 27 further comprising a transfer case having a transfer case mode, said controller changing the transfer case mode based on brake-steer.

29. A vehicle as recited in claim 27 wherein said controller is programmed to apply brake-steer by applying a first brake and a second brake to reduce the turning radius of the vehicle.

30. A vehicle as recited in claim 27 wherein said controller is programmed to apply brake-steer by applying at least one brake at a first wheel to reduce a vehicle turning radius.

31. A vehicle as recited in claim 27 wherein said controller is programmed to apply brake-steer by applying an increased drive torque to a second wheel relative to the first wheel.

32. A vehicle as recited in claim 27 further comprising a steering wheel angle sensor generating a steering wheel angle signal, said controller programmed to apply brake-steer in response to the reverse directional signal and the steering wheel angle signal.

33. A vehicle as recited in claim 27 further comprising a yaw rate sensor generating a yaw rate signal, said controller programmed to apply brake-steer in response to the reverse direction signal and yaw rate signal.

34. A vehicle as recited in claim 27 further comprising a steering wheel torque sensor generating a steering torque signal, said controller programmed to apply brake-steer in response to the reverse direction signal and steering torque signal.

35. A vehicle as recited in claim 27 further comprising a steering wheel angle sensor generating a steering wheel angle signal and a vehicle velocity sensor generating a vehicle velocity signal, said controller programmed to apply brake-steer in response to the reverse direction signal and steering wheel angle and vehicle velocity signal.